STN/EAST Search history

(FILE 'HOME' ENTERED AT 10:06:35 ON 30 MAR 2005)

FILE 'AGRICOLA, MEDLINE, CAPLUS, BIOSIS' ENTERED AT 10:06:42 ON 30 MAR 2005

```
L1        4112 S DIOL AND ALDEHYDE
L2          46 S L1 AND OXIDOREDUCTASE
L3          42 DUP REM L2 (4 DUPLICATES REMOVED)
L4          60 S DIOL (10N) OXIDOREDUCTASE
L5          10 S DIOL (2N) OXIDOREDUCTASE
L6           6 DUP REM L5 (4 DUPLICATES REMOVED)
L7        1016 S DIOL (10N) ALDEHYDE
L8           3 S L7 AND (PHA OR PHB)
L9           3 DUP REM L8 (0 DUPLICATES REMOVED)
L10      16948 S 1,3-PROPANEDIOL
L11         73 S L10 AND OXIDOREDUCTASE
L12          6 S L11 AND DIOL
L13          6 DUP REM L12 (0 DUPLICATES REMOVED)
L14        174 S (CONVERT) (10N) (DIOL )
L15          4 S L14 (10N) ALDEHYDE
L16          4 DUP REM L15 (0 DUPLICATES REMOVED)
L17         71 S DIOL (10N) CORRESPONDING (10N) ALDEHYDE
L18         56 DUP REM L17 (15 DUPLICATES REMOVED)
L19         12 S L18 AND (ENZYME OR PROTEIN OR OXIDOREDUCTASE OR DEHYDROGENASE
L20         12 DUP REM L19 (0 DUPLICATES REMOVED)
```

	Type	L #	Hits	Search Text
1	IS&R	L1	4	(("4873379") or ("2465319")).PN.
2	IS&R	L2	2	("4937314").PN.
3	BRS	L3	120943	diol neare2 oxidoreductase
4	BRS	L4	1502	aldehyde near2 dehydrogenase
5	BRS	L6	7	l5 and (pha or phb)
6	BRS	L5	78	l3 near10 l4
7	BRS	L7	10	l5 and polyester
8	BRS	L8	45	l5 and plastic
9	BRS	L9	13	diol near10 hydroxyalkanoate
10	BRS	L10	523	butanediol and hydroxybutyrate
11	BRS	L11	48	butanediol near10 hydroxybutyrate
12	BRS	L12	16	butanediol near10 4-hydroxybutyrate
13	BRS	L13	2	diol near10 4-hydroxybutyrate

- Search History will be lost after eight hours of inactivity.
- To combine searches use # before search number, e.g., #2 AND #6.
- Search numbers may not be continuous; all searches are represented.
- Click on query # to add to strategy

Search	Most Recent Queries	Time	Result
#39	Search **1.1.1.202[EC/RN Number]** Limits: ignored	10:03:51	12
#34	Search **1,3-propanediol** Limits: **Publication Date to 1999**	09:58:37	34
#32	Search **1.1.1.202** Field: **All Fields,** Limits: **Publication Date to 1999**	09:52:49	7
#31	Search **1.1.1.202**	09:52:41	13
#29	Search **forage foster**	09:51:28	4
#27	Search **Occurrence, metabolism, metabolic role, and industrial uses of bacterial polyhydroxyalkanoates**	09:46:11	1
#26	Search **sholl oxidoreductase**	09:41:34	17
#25	Search **sholl dha**	09:41:29	0
#24	Search **sholl dhat**	09:41:25	0
#23	Search **sholl pha**	09:41:12	0
#22	Search **sholl diol**	09:41:07	1
#21	Search **sholl**	09:41:01	177
#20	Search **skraly**	09:40:40	8
#19	Search **skraly diol**	09:40:37	0
#17	Search **Klebsiella pneumoniae johnson**	09:38:44	62
#16	Search **1,3-propanediol johnson**	09:38:03	0
#15	Search **Klebsiella pneumoniae 1,3-propanediol johnson**	09:37:55	0
#13	Search **Klebsiella pneumoniae 1,3-propanediol**	09:36:10	18
#12	Search **Klebsiella pneumoniae 1,3-propanediol:NAD+ oxidoreductase.**	09:35:55	2

#11	Search **johnson oxidoreductase diol**	09:35:03	17
#10	Search **johnson oxidoreductase**	09:34:51	2365
#9	Search **oxidoreductase diol** Field: **Title,** Limits: **Publication Date to 1999**	09:28:10	4
#8	Search **oxidoreductase diol** Field: **Title/Abstract,** Limits: **Publication Date to 1999**	09:27:35	71
#7	Search **oxidoreductase diol pha** Field: **Title/Abstract,** Limits: **Publication Date to 1999**	09:27:30	0
#6	Search **oxidoreductase diol pha** Limits: **Publication Date to 1999**	09:27:18	1
#5	Search **oxidoreductase diol** Limits: **Publication Date to 1999**	09:26:56	1018
#4	Search **diol pha** Field: **All Fields,** Limits: **Publication Date to 1999**	09:26:37	9
#3	Search **diol pha**	09:26:30	11
#1	Search **diol hydroxyalkanoate**	09:26:03	1

Clear History

	Type	L #	Hits	Search Text
1	BRS	L1	52	diol near2 dehydratase
2	BRS	L2	63	diol near2 dehydrogenase
3	BRS	L3	11229	alcohol near1 dehydrogenase
4	BRS	L4	13	13 and (diol near4 aldehyde)
5	BRS	L5	3	"6689589"/
6	BRS	L6	381	13 and diol
7	BRS	L7	0	15 and diol
8	BRS	L8	60	skraly
9	BRS	L9	16	skraly and diol
10	BRS	L10	3	sholl and diol
11	BRS	L11	0	15 and oxidoreductase
12	BRS	L12	0	15 and aldehyde
13	BRS	L13	0	15 and dhat
14	BRS	L14	0	15 and aldh
15	BRS	L15	76	polyhyroxyalkanoate
16	BRS	L16	19	115 and (diol or oxidoreductase or dhat or dha or aldh)
17	BRS	L17	124715	(diol or oxidoreductase or dhat or dha or aldh)
18	BRS	L18	5111456	(r dhat or dha or aldh)
19	BRS	L19	4176	(dhat or dha or aldh)
20	BRS	L20	308	(dhat aldh)
21	BRS	L21	7	(dhat and aldh)
22	BRS	L22	8	diol near2 oxidoreductase
23	BRS	L23	42	huisman and diol

pathway is therefore not restricted to the schemes outlined herein. Many different implementations will be apparent to those skilled in the art.

1,3-Propanediol oxidoreductase (EC 1.1.1.202) is found in several species of bacteria. Often it is induced under anaerobic conditions in the presence of glycerol (Forage & Foster, 1982, *J. Bacteriol.* 149:413-419). This enzyme catalyzes the reversible formation of 3-hydroxypropionaldehyde and other hydroxyaldehydes from the corresponding diol. Physiologically the enzyme is thought to be primarily used in diol formation, when the aldehyde is needed as an electron acceptor at the expense of NADH (Johnson & Lin, *J. Bacteriol.* 169:2050-54). Organisms that contain 1,3-propanediol oxidoreductase typically are able to convert glycerol to 1,3-propanediol, though similar activities are found in other organisms. Bacterial species noted for the ability to convert glycerol to 1,3-propanediol include *Klebsiella pneumoniae* (Streekstra et al., 1987, *Arch. Microbiol.* 147:268-75), *Klebsiella oxytoca* (Homann et al., 1990, *Appl. Microbiol. Biotechnol.* 33:121-26), *Klebsiella planticola* (*Id.*) and *Citrobacter freundii* (Boenigk et al., 1993, *Appl. Microbiol. Biotechnol.* 38:453-57) although many other examples are generally known.

Aldehyde dehydrogenases are extremely common in biological systems. Probing the *E. coli* genome database for homology shows that this organism alone contains at least seven putative enzymes of this type. They are so numerous and varied that even attempts to classify them all are complicated (e.g. Vasiliou et al., 1999, *Pharmacogenetics* 9:421-34). A discussion of all of the types and physiological roles of these enzymes is beyond the scope of this discussion. The choice of an appropriate aldehyde dehydrogenase for use in metabolic engineering should be done after evaluation of the substrate specificity of several candidates. Enzyme assays such as that described in Baldomá & Aguilar (1987, *J. Biol. Chem.* 262:13991-6) are useful for such diagnoses.

Acyl-CoA transferases (EC 2.8.3.x) and acyl-CoA synthetases (EC 6.2.1.x) both catalyze the formation of thioesters of organic acids with

1: Gene. 1991 Mar 1;99(1):15-23. Related Articles, Li

Cloning an Escherichia coli gene encoding a protein remarkabl similar to mammalian aldehyde dehydrogenases.

Heim R, Strehler EE.

Laboratory for Biochemistry, Swiss Federal Institute of Technology, CH-809 Zurich.

The nucleotide (nt) sequence of 2.9 kb of Escherichia coli genomic DNA tha encompasses a gene encoding a putative aldehyde dehydrogenase (ALDH) h been determined. The presence of an open reading frame beginning 2 nt downstream from the ALDH-coding sequence indicates that this gene may b part of a larger operon. An extended upstream nt sequence displays striking similarity to sequences found upstream or in intergenic regions of a number o other bacterial genes. Crude cell extracts from E. coli grown under several different conditions show weak but measurable ALDH enzyme activity that prefers NADP+ over NAD+ as coenzyme; however, aldH gene expression appears to be very low, since no specific transcripts derived from the novel gene can be detected on Northern blots of RNA isolated from these cells. Th deduced E. coli protein contains 495 amino acid (aa) residues with a calculat Mr of 53418. Its aa sequence showed marked similarity to NAD(+)-depende ALDHs of eukaryotes. About 40% aa sequence identity, and over 60% similarity, are detected between the E. coli protein and both the cytosolic (class-1) and the mitochondrial (class-2) forms of mammalian ALDHs. In contrast to the mammalian enzymes, which contain eight to eleven Cys residues, only four Cys are present in the E. coli protein, and of these only Cys302, corresponding to the disulfiram-sensitive residue in the mammalian enzymes, is found at a conserved position in both the prokaryotic and the eukaryotic ALDHs. The availability of a bacterial ALDH with a high degree similarity to mammalian ALDHs promises to facilitate future structural studi on these enzymes.

PMID: 1840553 [PubMed - indexed for MEDLINE]